

she had brought back extensive collections that were still not completely processed. In January, 1928, "Bracie", as she was known to friends, took over the processing of the Mexican and subsequent South American collections—preparing labels, sending sets to specialists for naming, arranging sales, and, finally, distributing the duplicates. In this connection, Mrs. Bracelin built up a wide correspondence and acquaintanceship with botanists throughout the world. Before her death, Mrs. Bracelin deposited all of the records of the Mexia collections, much of the Mexia correspondence, and information about the Mexia family in the Bancroft Library, University of California, Berkeley. The first set of the Mexia collections is deposited in UC. Mrs. Bracelin published the following articles treating Ynés Mexia and her collections:

Bracelin, Mrs. H. P. Itinerary of Ynés Mexia in South America. *Madroño* 3:174–175. 1935.

———. Ynés Mexia. *Madroño* 4:273–275. 1938.

Inasmuch as Mrs. Mexia had arranged to bring her Mexican collections to the University of California Herbarium at Berkeley, Mrs. Bracelin worked on them there. In May, 1929, Dr. E. B. Copeland, who was at that time Curator of the Herbarium, employed Mrs. Bracelin as an Herbarium assistant. In the early 1930's Bracie helped Dr. Carleton R. Ball in working up his willow collections for the revision of the genus *Salix* in the western United States. Later, she set herself the task of making a collection of the exotic plants growing in the Anson and Anita Blake estate (now the property of the University of California, Berkeley). With duplicates, her 1392 garden collections amounted to about 20,000 sheets, all of which were distributed to herbaria expressing an interest in cultivated plants. After leaving the University of California Herbarium, she perfected her skills as a scientific illustrator (specializing in the field of graphs and charts). From January, 1940, to July, 1943, Mrs. Bracelin was an assistant in the Botany Department of the California Academy of Sciences, San Francisco, and after that, until her retirement in 1960, she was on the staff of the Western Regional Research Laboratory, U.S.D.A., Albany, California.

Mrs. Bracelin (née Nina Floy Perry) was born 24 March 1890 at Star Lake, Minnesota. She died in Berkeley, California, on 8 July 1973. She is remembered as a cheerful, friendly person, ever helpful to others, with a great capacity for work that was well done. Four plants were named in her honor: *Cordia Braceliniae* I. M. Johnston, *Fuchsia Braceliniae* Munz, *Salix lasiolepis* var. *Braceliniae* Ball, *Vochysia Braceliniae* Standley.—ANNETTA M. CARTER, Department of Botany, University of California, Berkeley 94720.

WHITE FIR IN THE MOUNTAINS OF EASTERN MOJAVE DESERT OF CALIFORNIA.—During recent floristic surveys of the Providence, New York, and Clark mountains in the eastern Mojave Desert, a small, previously unrecorded population of white fir [*Abies concolor* (Gord. et Glend.) Lindl.] was located near the summit of the New York Mountains. Although white fir is wide ranging in western North America, occurring from central Oregon and Colorado south to Mexico, in the Mojave Desert it is known only from the Charleston (Spring), Clark, Kingston, and now the New York Mountains. These populations are of interest because they are disjunct islands of coniferous forest lying between the Rocky Mountains and the mountains of

southern California. The white firs and their associates represent remnants of perhaps a more widespread coniferous forest. The extent of these former coniferous forests is unknown.

The population of white fir in the New York Mountains occurs in a small, protected, very steep, north-facing granitic ravine just below the crest of the range. It lies 0.6 km slightly east of true north from the summit and 0.6 km west of the mine in Keystone Canyon at 2073–2164 m (6800–7100 ft). The stand occurs over approximately 0.8 hectares (2 acres) and consists of only thirty trees, the largest of which measured 71 cm (28 in) DBH and approximately 17 m (55 ft) in height. All size classes were represented in the population; nearly half were less than 10 cm DBH, nine were over 40 cm DBH.

In the Kingston Mountains, white fir stands occur in two narrow, very steep, north-facing, granitic canyons north of Kingston Peak. The white firs are scattered over about 12 hectares (30 acres) from 1950–2195 m (6400–7200 ft). The populations were estimated to contain about 150 individuals. The largest tree observed measured 86 cm (34 in) DBH; the tallest tree was about 20 m (66 ft) high. Again all size classes were present but, as in the New York Mountain population, seedlings were rare.

White fir is much more extensive in the Clark Mountains, occurring in two separate canyons and upper intervening areas on the steep, north-facing limestone slopes and on the limestone wall below the crest of Clark Mountain. The stand covers about 65 hectares (160 acres), much larger than designated by Miller (Condor 42:161–163), and contains over 1000 individuals between 1905 and 2347 m (6250–7700 ft). Of the trees sampled the largest was 87 cm (35 in) DBH and the tallest was 17 m (56 ft). Approximately 30 percent were less than 10 cm DBH. The population is represented by all size classes, although more frequently by the smaller classes. No seedlings with juvenile foliage were observed.

White fir is much more common in the Charleston Mountains where Clokey (Univ. Calif. Pub. Bot. 24, 1951) notes its occurrence from 2270–3300 m (7450–10800 ft).

The white fir in the eastern Mojave Desert represents the Rocky Mountain form, which has been designated as *A. concolor* var. *lowiana* (Gord.) Lemmon. This taxon, which is usually not recognized by North American botanists, differs in both morphological and chemical characteristics from the Sierran form (var. *concolor*). The Rocky Mountain form is morphologically characterized by having leaves reoriented by general curvature of the entire leaf rather than a more localized twist at the base as in the Sierran form (Critchfield, pers. comm.). Zavarin and Snajberk (Phytochemistry 4:141–148) cite distinct quantitative differences in terpenes between these forms. Critchfield notes that influence of the Rocky Mountain form occurs as far east into California as the Tehachapi Mountains.

The white fir populations in the three California ranges are limited to the more mesic, north-facing slopes and represent persisting, relict stands of mesophytic species. Though Wells and Burger (Science 155:1640–1647) have provided evidence from a study of wood rat middens that there may have been a past continuance of juniper woodland between some of the ranges in the Mojave Desert, they note that there is no evidence of a continuous distribution of the more mesophytic vegetations between these ranges and the rocky or southern Californian mountains for the past 40,000 years. They further note the uneven pattern of distribution of a few dominant species associated with the white fir in the Mojave Desert ranges and the absence of white fir from the Panamint Mountains even though this range contains other mesophytic species commonly associated with white fir, e.g., *Acer glabrum* var. *diffusum* and *Betula fontinalis*, as well as rather limited areas of the next higher vegetation zone of bristle-cone and limber pines. The uneven distribution of plant species between these ranges is shown even more by other perennial associates. Plants associated with the white fir populations on the three California ranges, New York, Clark, and Kingston, are indicated in tabular form in Table 1. Occurrence of these



	NY	CL	KN	CH	—	CO	TR	PR	CC	SN	GB	CD	CB	RM	SC	E
Species ranging eastward																
<i>Eriogonum umbellatum</i> var. <i>ferrissii</i>	NY	CL	KN	CH							GB	CD				
<i>Galium munzii</i>		CL									GB	CD			SC	
<i>Galium wrighii</i>		CL		CH							GB	CD			SC	E
<i>Fraxinus anomala</i>	NY	CL		CH							GB	CD				
<i>Ipomopsis aggregata</i> ssp. <i>arizonica</i>	NY	CL	KN	CH							GB	CD	CB	RM		
<i>Juniperus osteosperma</i>	NY	CL	KN	CH							GB	CD				
<i>Lomatium parryi</i>	NY	CL	KN	CH							GB	CD				
<i>Penstemon eatonii</i>	NY	CL	KN	CH							GB	CD				
<i>Petradoria pumila</i>	NY	CL	KN	CH							GB	CD	CB	RM	SC	
<i>Petrophyllum caespitosum</i>	NY	CL									GB	CD	CB	RM	SC	E
<i>Pinus edulis</i>	NY										GB	CD				
<i>Silene verecunda</i> ssp. <i>andersonii</i>	NY		KN	CH							GB	CD				
<i>Zauschneria garrettii</i>	NY		KN								GB	CD		RM		
Species of general distribution																
<i>Chrysothamnus viscidiflorus</i>								TR	PR	CC	GB		CB	RM		
ssp. <i>viscidiflorus</i>			KN	CH			TR	PR		SN	GB	CD				
<i>Acer glabrum</i> var. <i>diffusum</i>		CL	KN	CH			TR	PR		SN	GB	CD	CB	RM		
<i>Amelanchier utahensis</i>			KN	CH			TR	PR		SN	GB	CD	CB	RM		
<i>Haplophragma cuneatus</i>	NY	*	KN	CH			TR	PR		SN	GB	CD				
<i>Holodiscus microphyllus</i>	NY	CL	KN	CH			TR			SN	GB	CD		RM		
var. <i>microphyllus</i>																
<i>Opuntia erinacea</i> var. <i>erinacea</i>	NY	CL	KN	CH				PR			GB	CD				
<i>Philadelphus microphyllus</i>	NY	CL	KN	CH				PR			GB	CD				
ssp. <i>stramineus</i>																
<i>Pinus monophylla</i>	*	CL	KN	CH				PR		SN	GB	CD				
<i>Quercus chrysolepis</i>	NY					CO	TR	PR		SN	GB	CD				SC
<i>Quercus turbinella</i> var. <i>turbinella</i>	NY						PR	PR	CC	SN	GB	CD	CB	RM		SC
<i>Ribes cereum</i>								PR								
<i>Ribes velutinum</i> var. <i>glanduliferum</i>	NY	CL	KN	CH			TR			SN	GB	CD	CB	RM		
<i>Sambucus mexicana</i>		CL		CH			TR			SN	GB	CD				SC

taxa in the Charleston Mountains is also included for comparison (Clokey *ibid.*), as is the general range of each species outside the area. It must also be noted that the populations of white fir on the New York and Kingston Mountains occur on granite substrate, while those in the Clark Mountains occur on limestone.

Of the thirty-nine species observed in association with the white firs on the New York, Kingston, and Clark mountains, two are endemic to these ranges and the remaining are rather equally divided between those that range to (1) west, e.g., Sierra Nevada and Transverse ranges, (2) east (Colorado Plateau and beyond), and (3) both east and west of this portion of the Mojave Desert. The percentage of species shared by any two mountains ranges from 44 to 61 percent and is higher between the Charleston Mountains and Clark and Kingston Mountains and lower between the New York Mountains and the Kingston and Charleston Mountains. Only nine (23%) of the species occur on all four ranges. Of interest is the uneven distribution of some of the more conspicuous species; for example, *Quercus chrysolepis*, *Q. turbinella*, and *Pinus edulis* are known only from the New York Mountains. The moderate floristic discontinuity between the more mesic habitats on these ranges would seem to support considerations that the white fir and associated species have probably never been continuous between the ranges in the past.—JAMES HENRICKSON and BARRY PRIGGE, Department of Biology, California State University, Los Angeles 90032.

#### LITERATURE OF INTEREST

Fungi that decay Ponderosa Pine. By Robert L. Gilbertson. 197 pp., illus. University of Arizona Press, Tucson. 1974. \$9.50.

Color supplement to the vascular plants of San Luis Obispo County, California. By R. F. Hoover, 40 pp., 32 of these in color. Privately published, 1974; obtainable from Mrs. Betty L. Hoover, 330 Chaplin Lane, San Luis Obispo, CA 93401. \$2.00 plus \$0.10 postage. Illustrates 172 taxa of plants from San Luis Obispo County.

Seeds of woody plants in the United States. U.S.D.A. Handbook 450. 1974. A revision of Misc. Publ. 654 (1948).

Utah plants, Tracheophyta. Third edition. By S. L. Welsh and G. Moore. iv + 474 pp. Brigham Young University Press, Provo, Utah. 1973. [Second edition published in 1965 under the title *Common Utah plants*]. Contains keys to 2500 native and adventive plants.

Report on endangered and threatened plant species of the United States. Smithsonian Institution report presented to Congress, House Document No. 94-51. 200 pp. Government Printing Office. 1974. Contains lists of endangered, threatened, commercially exploited, and recently extinct species of the United States (including Alaska and Hawaii), as well as recommendations for the preservation and protection of these species. Listings of endangered and threatened species arranged alphabetically by States are included. A limited number of complimentary copies of the Report are available, upon written request, from: Endangered Flora Project, Department of Botany, Smithsonian Institution, Washington, D. C. 20560.